



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ :
B65B 29/02, 9/02 // B65D 75/42

A1

(11) International Publication Number: WO 96/23695

(43) International Publication Date: 8 August 1996 (08.08.96)

(21) International Application Number: PCT/GB96/00170

(22) International Filing Date: 26 January 1996 (26.01.96)

(30) Priority Data:
9502209.1 3 February 1995 (03.02.95) GB

(71) Applicant (for all designated States except US): PREMIER BRANDS UK LTD. [GB/GB]; P.O. Box 171, Franklin House, Bournville, Birmingham B30 2NA (GB).

(72) Inventor; and

(75) Inventor/Applicant (for US only): BARRATT, Steven, John [GB/GB]; 20 Wood Lane, Greasby, Wirral, Merseyside L49 2PT (GB).

(74) Agent: BAILEY WALSH & CO.; 5 York Place, Leeds LS1 2SD (GB).

(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AZ, BY, KG, KZ, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

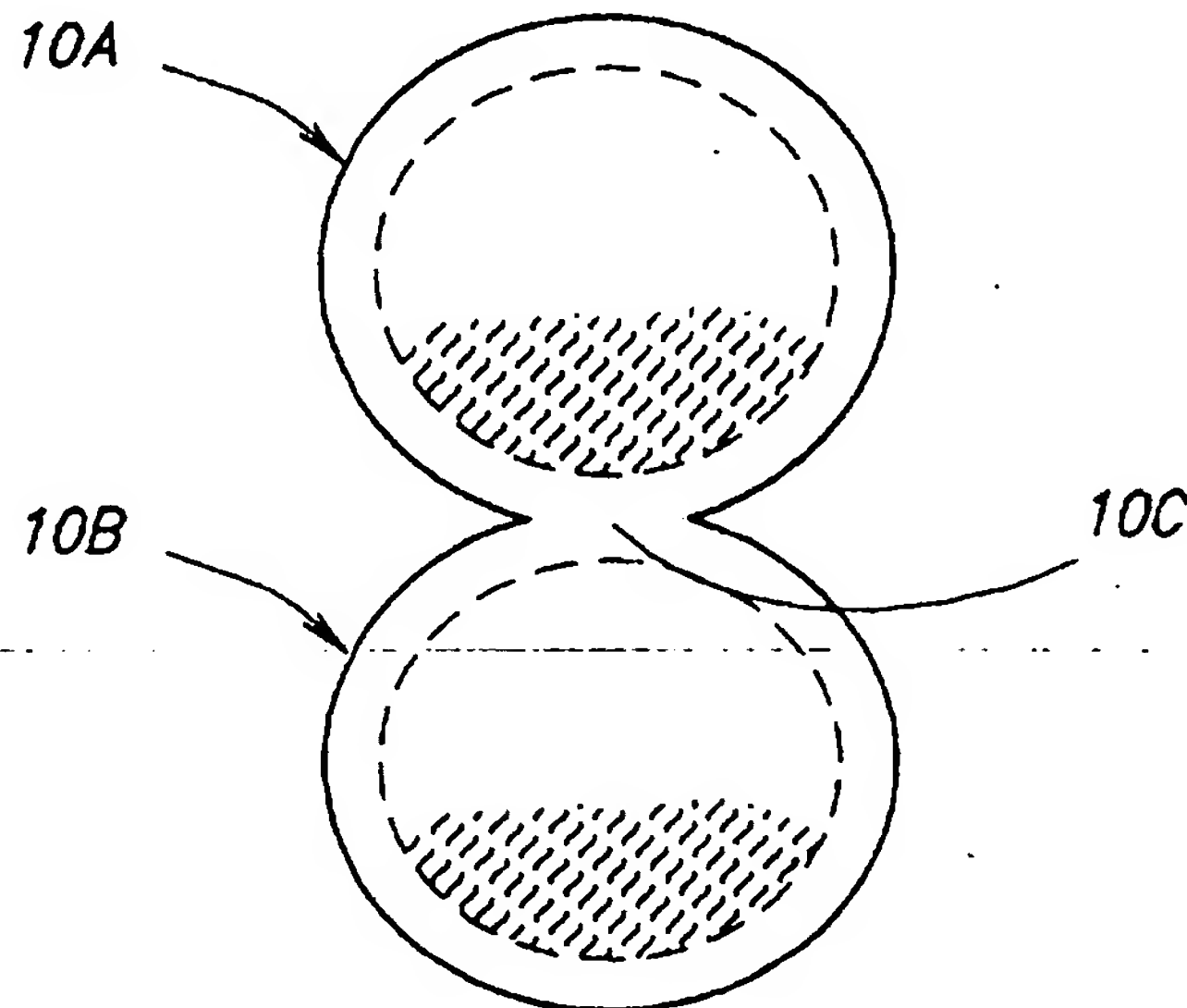
Published

With international search report.

(54) Title: ROUND INTERCONNECTED TEA BAGS GROUPED IN PAIRS

(57) Abstract

The present invention provides that tea bags are produced in pairs on a high speed tea bag producing machine of known type. The machine is however modified so that the tea bags which are produced are of circular form and are produced in pairs of which the tea bags of each pair are joined together tangentially by a tag which can be readily broken to separate the bags for individual use.



PCT AVAILABLE COPY

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AM	Armenia	GB	United Kingdom	MW	Malawi
AT	Austria	GE	Georgia	MX	Mexico
AU	Australia	GN	Guinea	NE	Niger
BB	Barbados	GR	Greece	NL	Netherlands
BE	Belgium	HU	Hungary	NO	Norway
BF	Burkina Faso	IE	Ireland	NZ	New Zealand
BG	Bulgaria	IT	Italy	PL	Poland
BJ	Benin	JP	Japan	PT	Portugal
BR	Brazil	KE	Kenya	RO	Romania
BY	Belarus	KG	Kyrgyzstan	RU	Russian Federation
CA	Canada	KP	Democratic People's Republic of Korea	SD	Sudan
CF	Central African Republic	KR	Republic of Korea	SE	Sweden
CG	Congo	KZ	Kazakhstan	SG	Singapore
CH	Switzerland	LI	Liechtenstein	SI	Slovenia
CI	Côte d'Ivoire	LK	Sri Lanka	SK	Slovakia
CM	Cameroon	LR	Liberia	SN	Senegal
CN	China	LT	Lithuania	SZ	Swaziland
CS	Czechoslovakia	LU	Luxembourg	TD	Chad
CZ	Czech Republic	LV	Latvia	TG	Togo
DE	Germany	MC	Monaco	TJ	Tajikistan
DK	Denmark	MD	Republic of Moldova	TT	Trinidad and Tobago
EE	Estonia	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	UG	Uganda
FI	Finland	MN	Mongolia	US	United States of America
FR	France	MR	Mauritania	UZ	Uzbekistan
GA	Gabon			VN	Viet Nam

ROUND INTERCONNECTED TEA BAGS GROUPED IN PAIRS

This invention relates to the packaging of tea bags which are small sachets of a material such a permeable tissue paper, each sachet containing a portion of tea, so that in the use of same, a liquid medium such as hot water can pass into and through the sachet thereby to mix with the tea in order to produce the beverage.

Especially in the United Kingdom, tea bags of this nature are extremely well known and are widely used, and typically the single tea bag embodies sufficient tea for making one or two cups of the beverage. The tea bags may be used in teapots, or more frequently they are used on a "one cup" basis wherein a single tea bag is placed in a beverage drinking vessel such as a cup which is then filled with hot water in order to produce the beverage.

The technology for the manufacture of tea bags is now well developed, and under factory conditions, these tea bags can be produced by machines at a high rate, for example in the order of 2,000 tea bags per minute.

The world leader in the manufacture of machines for producing these tea bags at these speeds is an Italian company by the name of IMA who over the years have produced two types of tea bag manufacturing machines namely an IMA C50 and an IMA C51. Each of these machines produces tea bags in pairs by feeding a first permeable paper web horizontally in synchronism with the dropping onto the web in pairs of doses of tea so that two rows of tea doses, of which each dose is isolated on the web, extend longitudinally of the web. The second web is placed over the first web in order to cover the doses, and then the thus formed two web structure is passed between a first pair or rollers to form a laminating step whereby the

webs are sealed together in order to define the individual sachets. The sachets then move to a cutting station whereat the laminated webs are cut transversely to form discrete pairs of tea bags, and the webs are also perforated longitudinally, so that a perforation seam is formed between each pair of tea bags. This is provided so that the tea bags of each pair can be separated by the user readily and reliably, but as the pairs of tea bags emerge from the machine, there remain interconnected along the line of the perforation.

The machine bushes the pairs of tea bags into a magazine to form stacks, and the stacks of a predetermined number are pushed from the magazine into for example a carton in which the tea bags are sold.

This method of tea bag manufacture and packaging has been available in the United Kingdom for at least the last fifteen to twenty years.

More recently, there have been adaptations of tea bag manufacture and packaging, and in a first development, we proposed that the manufacturing machine such as is described above could be modified in order to sever the individual tea bags of each pair in order to provide "singles" tea bags so that the user would not have to separate the tea bags of the pairs of tea bags at the point of use.

Furthermore, in a subsequent development, it was provided by us that the tea bags in pairs could be packaged in wrappings, in particular wrappings of foil seal material by a flow wrap method in order to provide a form of pillow pack containing stacks of tea bags, and this arrangement is outlined in our British patent No 2228912.

In parallel with the developments outlined above, it also was proposed by others that the machines described above might be modified in order to produce round tea bags instead of the traditional square or rectangular tea bags which had been produced for many years. Thus, there has been proposed an arrangement for the production of round tea bags by a modified IMA machine as described above.

Our British patents Nos 2271549, 2279638, and 2278822 are concerned with the packaging of round tea bags in flow wrap materials, and as can be seen from these specifications, the difficulty which is encountered in packaging round tea bags in flow wrap material is that it is difficult to keep control of the tea bag stacks, because of the shape of the tea bags on the one hand, and also because the tea bags being of round configuration have been produced as single items.

The present invention is concerned with the packaging of stacks or round tea bags, and in this connection the expression "round" is intended to mean tea bags having a periphery at least a portion of which is curved or having an edge portion which may be straight but which is of less length than the overall length of the tea bag in the same direction as that edge.

In accordance with the present invention round tea bags (as defined herein) are produced on the high speed machinery described but are grouped in pairs in tangential fashion, and are left interconnected by a severable web portion where the tea bags are tangential.

It will be appreciated that where the bags are circular, the tangential region will be where the circles touch, but if the tea bags are polygonal, the tangential portion will be where two of the polygonal sides of respective bags are coincident.

In the majority of cases the bags will be circular, and where reference is made hereinafter to round tea bags, circular tea bags are intended unless the context does not permit such meaning.

Tea bags according to the present invention are provided in that the cutters of the IMA production machine are suitably modified so as to define in effect a dumb bell shape, the centre portion of the dumb bell defining the connecting web portion for the tea bag pairs.

The sealing section of the machine will have its rollers also appropriately profiled so as to seal the web in a dumb bell configuration to define the two tea bags which will be interconnected.

Each pair of tea bags which is cut from the web forms a unit which is moved into the magazine, and the stacks made up by a multiplicity of these units will be capable of being moved reliably and predictably by a pusher from the magazine into either a packaging carton, or into a conveying channel to enable the stacks to be passed to a flow wrap machine to be wrapped with flow wrap material in a manner similar to that described in either of our patent No 2228912.

Because the round tea bags will be grouped in pairs only by a very narrow "tag", the user will be able to separate the individual tea bags easily.

There is another advantage of having the pairs of tea bags tagged together, apart from the handling advantage, and that is that if the tea bags are packaged in a carton, they will tend to remain in the carton in neat piles rather than become displaced and strewn over the interior of the carton as at

present happens with conventional packaging of round tea bags.

An embodiment of the present invention will now be described, by way of example, with reference to the accompanying diagrammatic drawings, wherein;-

Fig. 1 is a plan view of conventional round tea bag;

Fig. 2 is a perspective view showing how the round tea bags of Fig. 1 are conventionally packaged in a carton;

Fig. 3 is a perspective view illustrating the method and manufacture of the round tea bags of Fig. 1;

Fig. 4 is a view similar to Fig. 3, but showing how the equipment is modified in order to produce tea bags according to the present invention, and by the method and apparatus according to the invention;

Fig. 5 is a view similar to Fig. 1, but showing tea bags according to the invention;

Fig. 6 shows a stack of tea bags each as shown in Fig. 5; and

Fig. 7 shows how the stacks of tea bags shown in Fig. 6 are packaged in a carton by way of comparison with the illustration of Fig. 2.

Referring to the drawings, in Fig. 1 a conventional tea bag 10 is shown and it will be seen to be of circular configuration. It is made up of two layers of filter paper sealed together in the peripheral region 12, to define a cavity 16 in which the dose 16 of tea is contained. The function and operation of these tea bags is extremely well

known and will not be described further.

Fig. 2 shows how a plurality of the bags 10 are packaged in a carton 18 which is closable by a lid 20. As is shown in Fig. 2, the tea bags 10 are strewn randomly throughout the carton, and present in fact to the user a rather unsightly appearance. The looseness of the bags also causes some of the tea 16 to permeate through the filter paper, and tea dust gathers in the carton and has to be disposed of.

In order to identify the advantages of the present invention, it is important to appreciate how the tea bags of Fig. 1 are manufactured, and the manufacturing process and equipment are illustrated diagrammatically in Fig. 3. Referring to that figure, a first web 22 of the filter paper is fed under a guide roller 24, to define a horizontal reach on which are placed the doses of tea 16 in parallel rows and at spaced intervals so that the doses 16 are discretely arranged.

A second web 26 is applied over the first web in order to trap the doses 16 between the webs. Web 26 passes round a sealing roller 28 having cavities 30 of circular form to define the tea bags 10 in the two webs 22 and 26 as shown. Sealing is effected by heat to provide the sealed borders 12.

As the laminated webs travel as indicated by arrow 30 in a horizontal direction, they arrive at a pair of cutting rollers 32 and 34 of which at least one is recessed to provide circular recesses 36 surrounded by cutting edges so that the individual tea bags 10 are cut from the web as shown.

As the webs proceed from the cutting roller pair 32, 36, so they reach a tamping mechanism 38 which is reciprocated at high speed as indicated by arrow 40 to displace the

individual tea bags from the travelling webs into stacks 42 and 44 magazine under the webs. The skeletal waste of the webs 46 travels onwards for disposal.

When predetermined numbers of tea bags are in stacks 42 and 44, the stack pairs are pushed as indicated by arrow 48 by an appropriate pushing mechanism laterally of the direction 30, until they are presented into or over the packaging carton 18. In the example shown, the stack pair 50, 52 is positioned over the carton 18, and the two stacks are then pushed downwardly as indicated by arrow 54 into the carton 18.

This process is carried out repeatedly and at high speed so that in fact the tea bags in the order of 2,000 a minute are produced. The cartons 18 are fed automatically when full to a dispatch location, and may be automatically closed during this process.

The problem with producing single round tea bags as described in relation to Figs. 1 to 3 is that the stacks are difficult to handle, and they are also difficult to package because individual tea bags can become displaced, and the stacks can fall over.

The problem becomes particularly acute if round tea bags are packaged in flow wrap as described in our British patent No 2271549, because the pairs of stacks for example 50 and 52 are difficult to transport reliably from the production machine to the flow wrap machine.

The present invention seeks to provide an arrangement wherein these difficulties are overcome, and the inventive concept is best illustrated in Fig. 5 which shows a pair of tea bags 10A and 10B each of similar construction to that shown in Fig. 1,

but which are connected by a tag 10C of the paper material so that the tea bags 10A and 10B form a pair each of which contributes to the others stability when the bags are produced in this way. By this simple tagging of the two bags together, considerable advantages result. Fig. 6 for example shows two pairs of stacks of tea bags of which the respective pairs are connected by the tags 10C, and the inherent stability of the assembly can be ascertained from the drawing. There will be less tendency for individual tea bags to drift from the stack, and for the stacks to fall over. Once the tea bags have been grouped in pairs in this way, they can either be packaged directly into cartons such as carton 18, where they will be arranged for example as shown in Fig. 7, and will remain in stacks presenting a neat appearance as compared to the arrangement shown in Fig. 2, or alternatively the pairs of tea bags in stacks can be passed directly to the flow wrap machine as described in our patent No 2271549 and as illustrated diagrammatically in Fig. 4.

In that figure, the apparatus is modified in order to produce pairs of tea bags as shown in Fig. 5, and the modifications are in connection with the sealing roller 28 and the cutting rollers 32 and 34 insofar as instead of providing discrete recesses such as 30 and 36, dumb bell shaped recesses 30A and 36A are provided so as to leave the tag 10C connecting the tea bag pairs.

Fig. 4 shows that the stacks of tea bag pairs are fed to a flow wrapping position 60 at which flow wrapping material 62 is applied to each pair of stacks, in a manner similar to that disclosed in our patent No 2228912 for the flow wrapping of stacks of rectangular tea bags.

By a simple, and particularly effective means, the invention therefore provides pairs of round tea bags which are tagged

together and can provide stacks which can be effectively handled for packaging in cartons on the one hand, or for packaging in flow wrap on the other hand.

CLAIMS

1. Round tea bags (as herein defined) characterised in that they are produced on high speed machinery they are grouped in pairs in tangential fashion, and they are interconnected where the webs are tangential by a severable web portion.
2. Round tea bags as claimed in Claim 1, characterised in that the tea bags are circular.
3. A modified high speed tea bag making machine of the Ima type in that the cutters for making the round tea bags are modified to define round tea bags as defined in Claim 1 or 2.

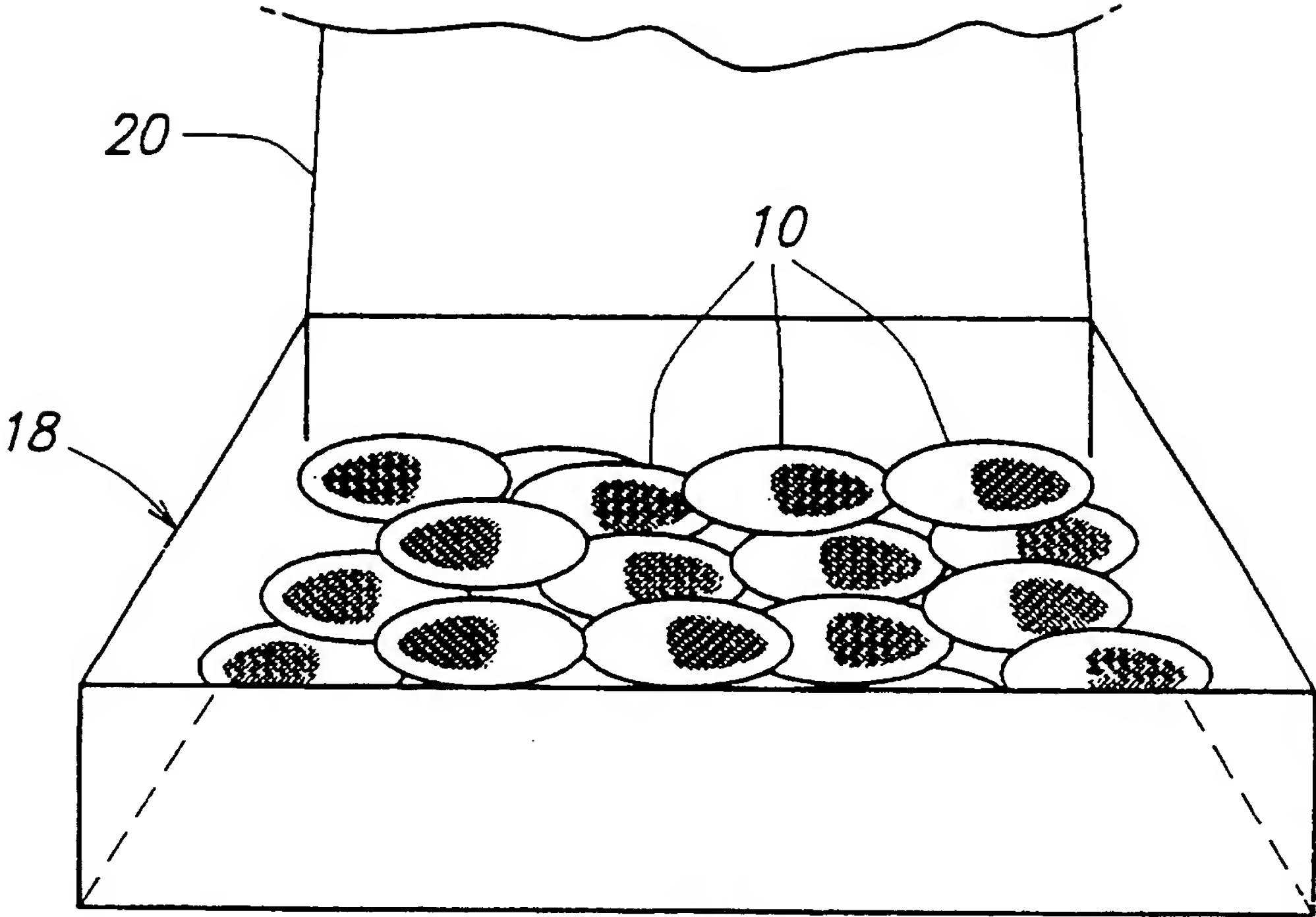


FIG. 2

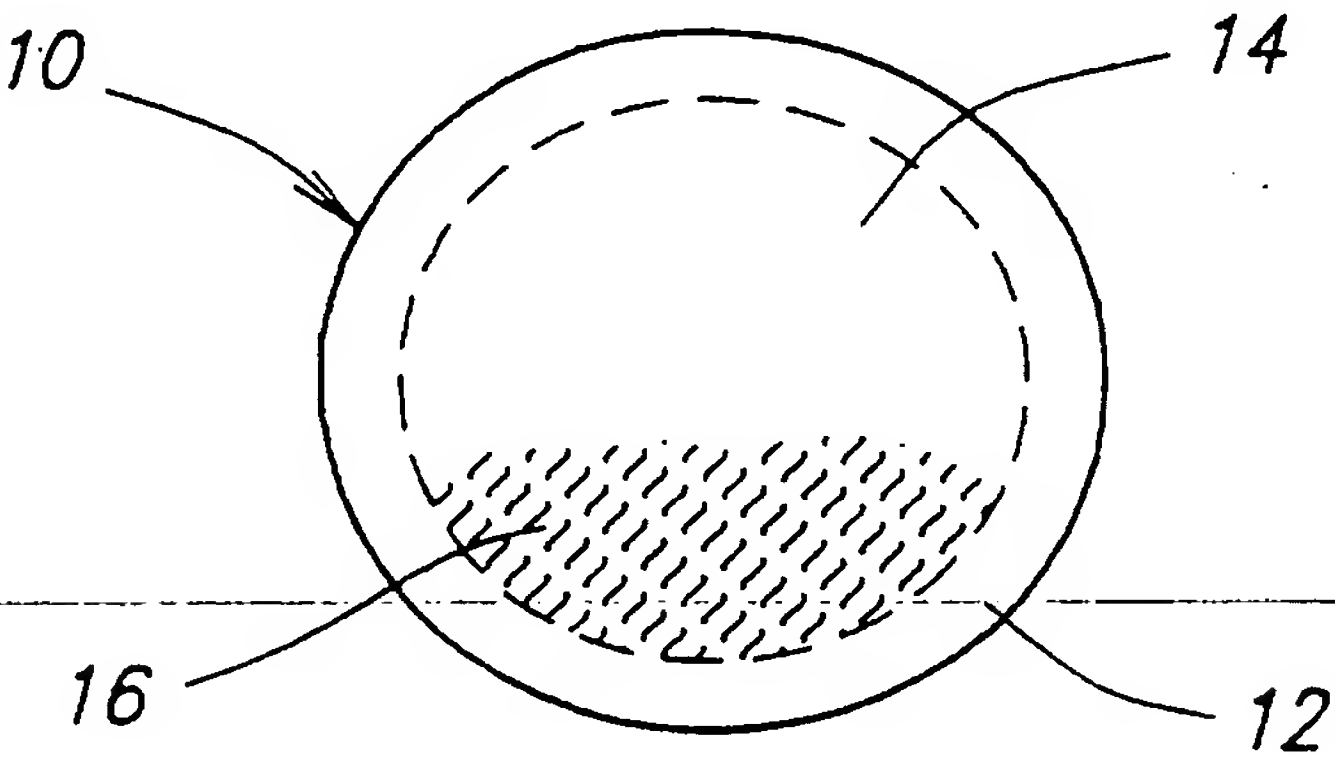
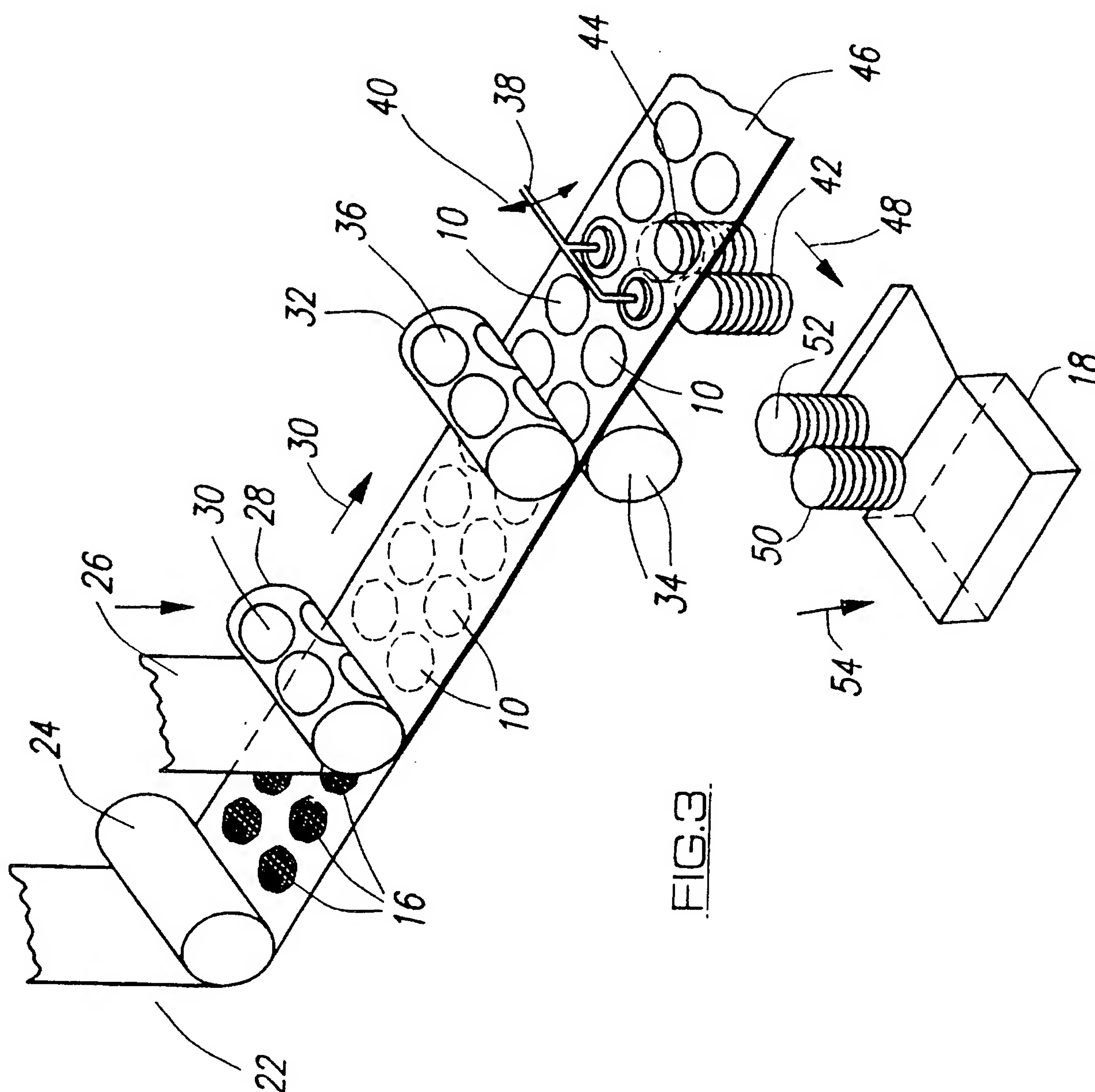
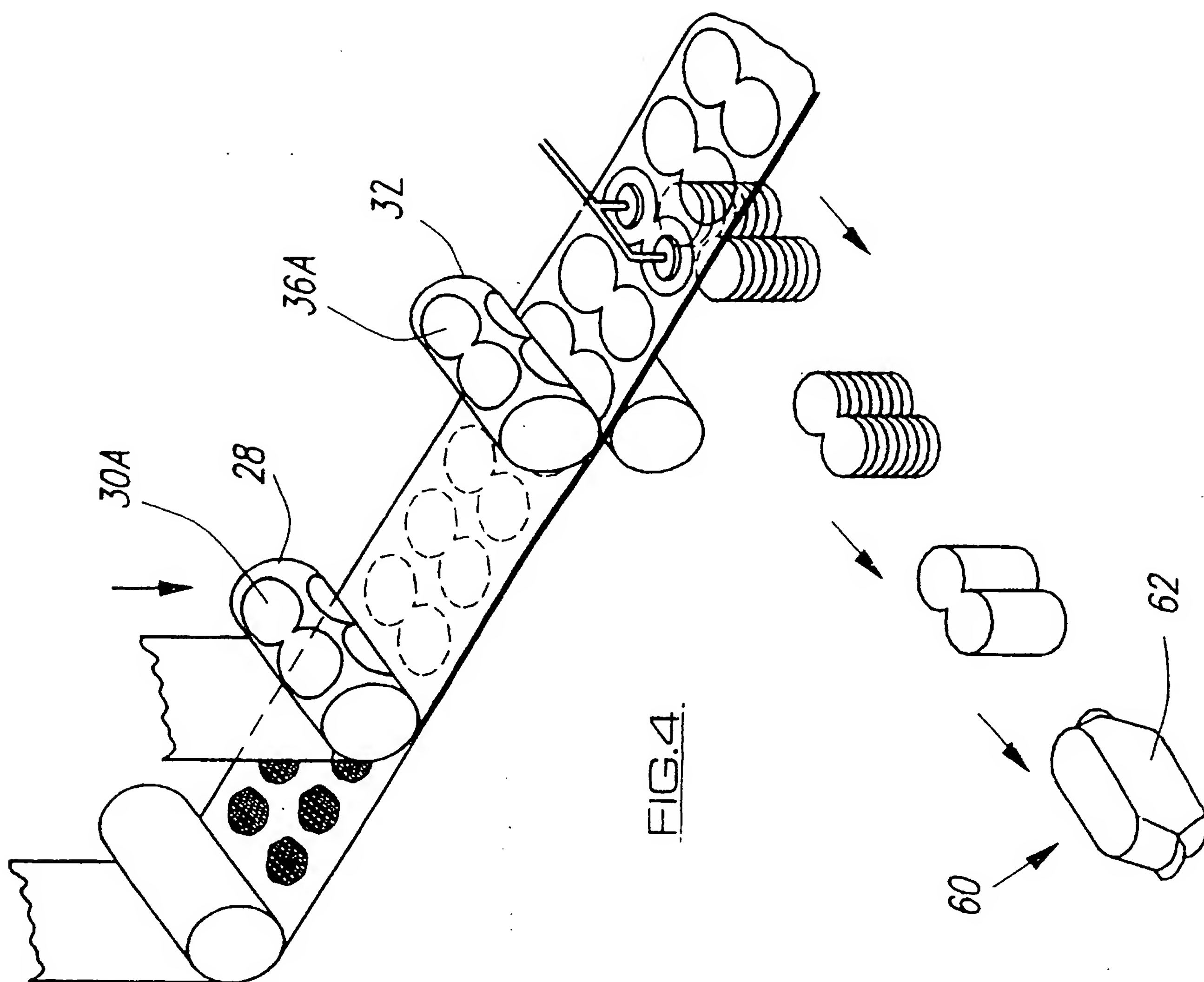


FIG. 1

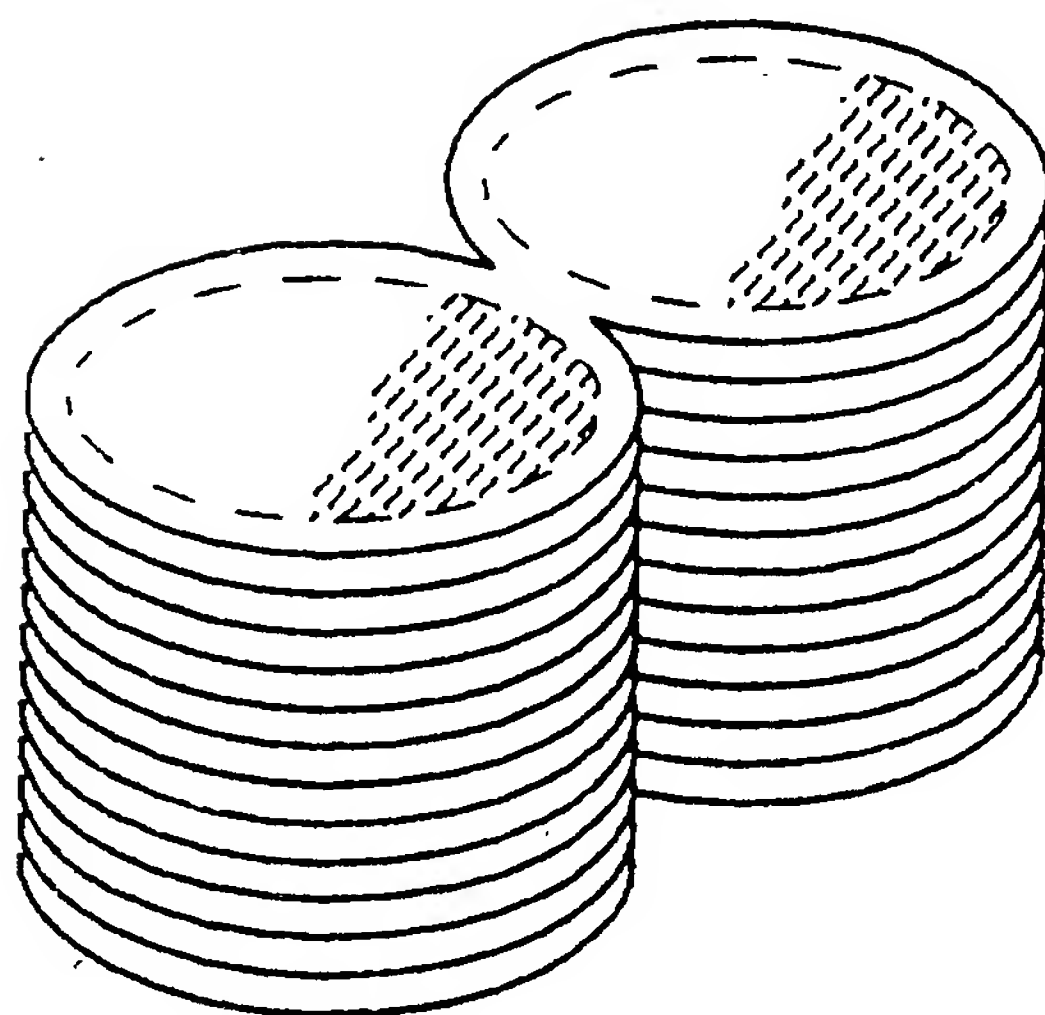
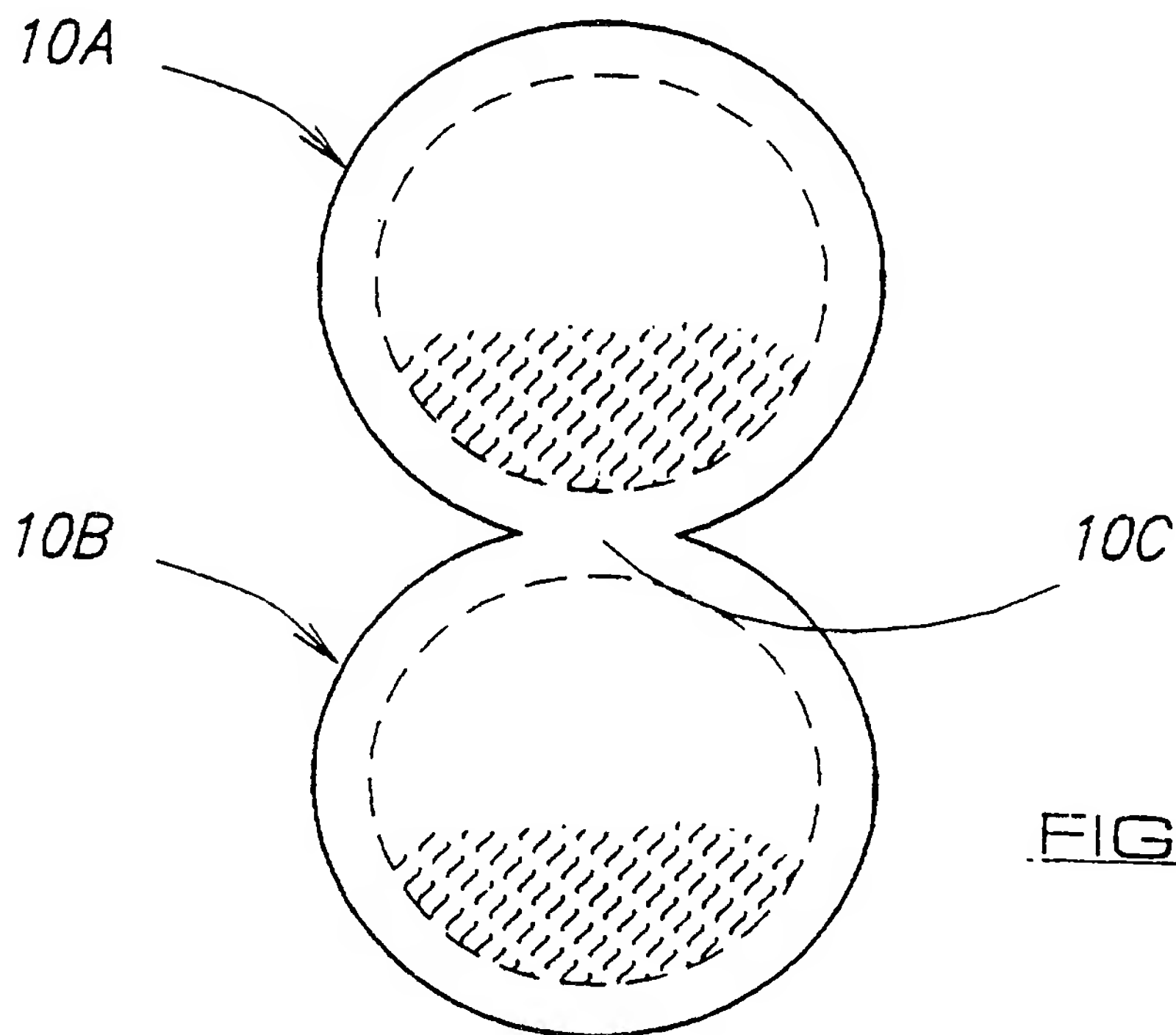


SUBSTITUTE SHEET (RULE 26)

3/5



4/5



5/5

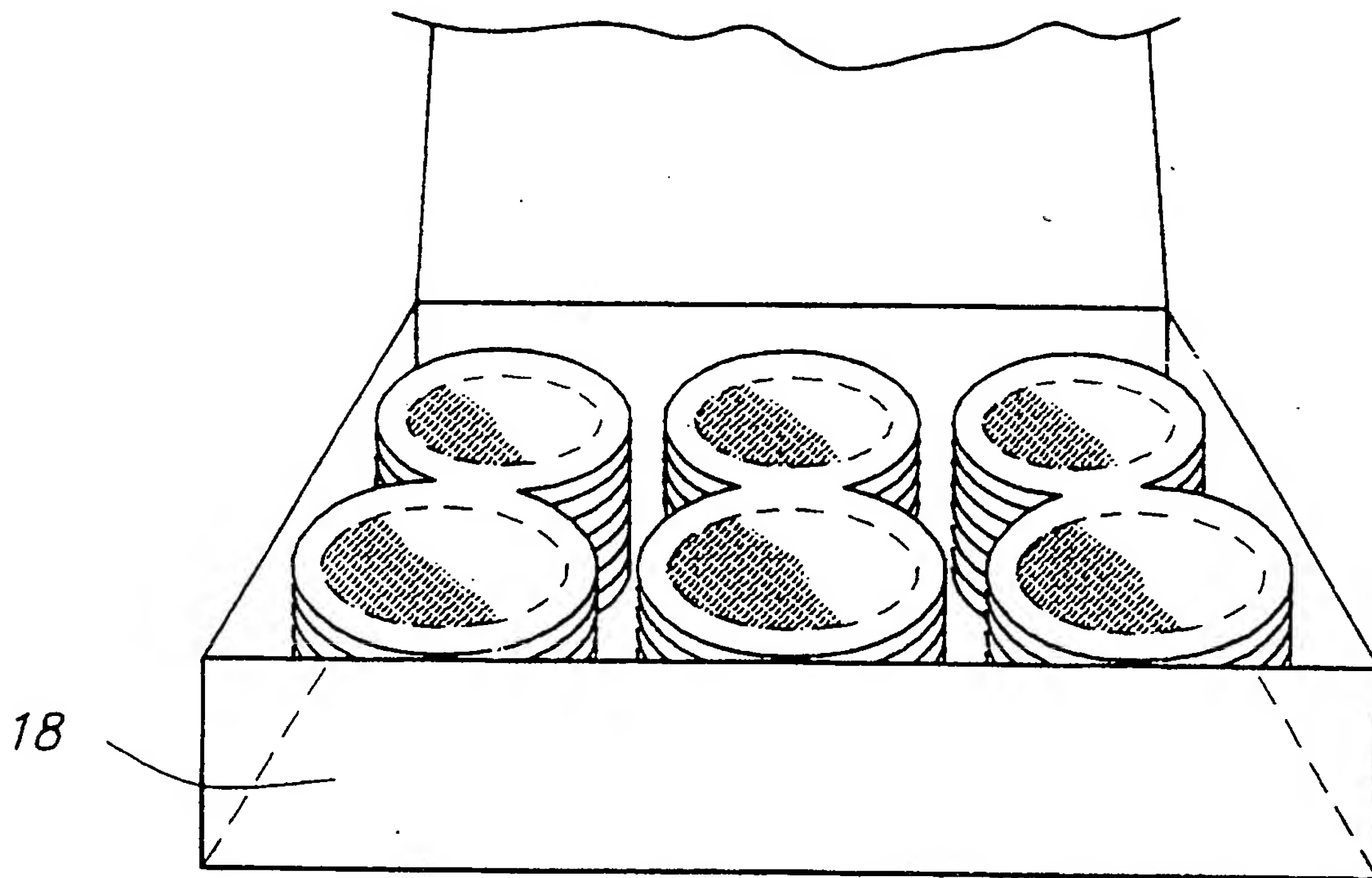


FIG. 7.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/GB 96/00170

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: B65B 29/02, B65B 9/02 // B65D 75/42

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: B65B, B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP, A1, 0548057 (A.G. (PATENTS) LIMITED), 23 June 1993 (23.06.93), figure 2, abstract --	1,2,3
A	DK, B, 118938 (GUY JOHN OLOF WELIN-BERGER), 19 October 1970 (19.10.70), figure 1 --	1
A	DE, B, 385967 (PAPIERFABRIK LAAKRICHEN AKTIENGESELLSCHAFT), 10 June 1988 (10.06.88), figure 1, abstract --	1

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

12 April 1996

Date of mailing of the international search report

15.05.96

Name and mailing address of the ISA:



European Patent Office, P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl.
Fax: (+31-70) 340-3016

Authorized officer

BJÖRN SALÉN

INTERNATIONAL SEARCH REPORT

International application No.

PCT/GB 96/00170

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim N°
A	GB, A, 2278822 (PREMIER BRANDS U K LIMITED), 14 December 1994 (14.12.94), figure 2 -----	1

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Information on patent family members

05/02/96

International application No.

PCT/GB 96/00170

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A1- 0548057	23/06/93	AU-B,B- 618893	09/01/92
		AU-A- 1483995	18/05/95
		AU-A- 5406990	29/11/90
		CN-A- 1046714	07/11/90
		DE-D,T- 69003065	16/12/93
		EP-A,B- 0422157	17/04/91
		ES-T- 2043369	16/12/93
		IT-B- 1240815	17/12/93
		IT-D- 4789390	00/00/00
		US-A- 5233813	10/08/93
		US-A- 5459980	24/10/95
		WO-A- 9013487	15/11/90
DK-B- 118938	19/10/70	NONE	
DE-B- 385967	10/06/88	NONE	
GB-A- 2278822	14/12/94	GB-A,B- 2279638	11/01/95
		GB-D- 9416495	00/00/00
		GB-D- 9416496	00/00/00
		AU-B- 658895	04/05/95
		AU-B- 666281	01/02/96
		AU-A- 1341495	27/04/95
		AU-A- 1880392	12/01/93
		EP-A- 0588991	30/03/94
		GB-A,B- 2271549	20/04/94
		WO-A- 9222461	23/12/92

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☒ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.

THIS PAGE BLANK (USPTO)